

DOE/RL- 88- 21

Hexone Storage and Treatment Facility

Rev. 3, 6/30/94

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e. 12 character/inch).

FORM 3	DANGEROUS WASTE PERMIT APPLICATION	I. EPA/STATE I.D. NUMBER <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td>W</td><td>A</td><td>7</td><td>8</td><td>9</td><td>0</td><td>0</td><td>0</td><td>8</td><td>9</td><td>6</td><td>7</td></tr></table>	W	A	7	8	9	0	0	0	8	9	6	7
W	A	7	8	9	0	0	0	8	9	6	7			
FOR OFFICIAL USE ONLY														
APPLICATION APPROVED	DATE RECEIVED (mo., day, & yr.)	COMMENTS												
		Pending Approval												
II. FIRST OR REVISED APPLICATION														
<p>Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.</p>														
<div style="display: flex; justify-content: space-between;"><div style="width: 48%;"><p>A. FIRST APPLICATION (place an "X" below and provide the appropriate date)</p><div style="display: flex; justify-content: space-between;"><div style="width: 48%;"><p><input type="checkbox"/> 1. EXISTING FACILITY (See instructions for definition of "existing" facility. Complete item below.)</p><table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 33%;">MO.</td><td style="width: 33%;">DAY</td><td style="width: 33%;">YEAR</td></tr><tr><td>01</td><td>01</td><td>1952</td></tr></table><p><i>*FOR EXISTING FACILITIES, PROVIDE THE DATE (mo., day, & yr.) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left)</i></p><p><i>*The date construction of the Hanford Facility commenced.</i></p></div><div style="width: 48%;"><p><input type="checkbox"/> 2. NEW FACILITY (Complete item below)</p><table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 33%;">MO.</td><td style="width: 33%;">DAY</td><td style="width: 33%;">YEAR</td></tr><tr><td> </td><td> </td><td> </td></tr></table><p>FOR NEW FACILITIES, PROVIDE THE DATE, (mo., day, & yr.) OPERATION BEGAN OR IS EXPECTED TO BEGIN</p></div></div></div><div style="width: 48%;"><p>B. REVISED APPLICATION (place an "X" below and complete Section I above)</p><div style="display: flex; justify-content: space-between;"><div style="width: 48%;"><p><input checked="" type="checkbox"/> 1. FACILITY HAS AN INTERIM STATUS PERMIT</p></div><div style="width: 48%;"><p><input type="checkbox"/> 2. FACILITY HAS A FINAL PERMIT</p></div></div></div></div>			MO.	DAY	YEAR	01	01	1952	MO.	DAY	YEAR			
MO.	DAY	YEAR												
01	01	1952												
MO.	DAY	YEAR												
III. PROCESS - CODES AND CAPACITIES														
<p>A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the (Section III-C).</p>														
<p>B. PROCESS DESIGN CAPACITY - For each code entered in column A enter the capacity of the process.</p>														
<p>1. AMOUNT - Enter the amount.</p>														
<p>2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.</p>														
PROCESS	PRO- CESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY	PROCESS	PRO- CESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY									
Storage:			Treatment:											
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS	TANK	T01	GALLONS PER DAY OR LITERS PER DAY									
TANK	S02	GALLONS OR LITERS	SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY									
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS	INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR									
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS												
Disposal:														
INJECTION WELL	D80	GALLONS OR LITERS												
LANDFILL	D81	ACRE-FEET (the volume that would cover one acre to a depth of one foot) OR HECTARE-METER	OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided: Section III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY									
LAND APPLICATION	D82	ACRES OR HECTARES												
OCEAN DISPOSAL	D83	GALLONS PER DAY OR LITERS PER DAY												
SURFACE IMPOUNDMENT	D84	GALLONS OR LITERS												
UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE CODE									
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A									
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F									
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B									
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q									
GALLONS PER DAY	U	LITERS PER HOUR	H											
EXAMPLE FOR COMPLETING SECTION III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks; one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.														
A. PROCESS		B. PROCESS DESIGN CAPACITY												

LINE NUMBER	CODE (from list above)	1. AMOUNT (specify)	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY			
X-1	S02	600	G				
X-2	T03	20	E				
1	S02	48,000	G				
2	T04	3,000	U				
3	S01	40,000	G				
4							
5							
6							
7							
8							
9							
10							

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (CODE "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

S02 T04, S01

The Hexone Storage and Treatment Facility (HSTF) is located in the southeast corner of the 200 West Area of the Hanford Facility. The HSTF consists of two 24,000 gallon (91,000 liter) belowgrade carbon steel tanks --276-S-141 (S-141) and 276-S-142 (S-142), a distillation system, and railroad tank cars. The HSTF received liquid mixed waste from the Reduction/Oxidation (REDOX) Plant and possibly the Hot Semiworks Plant. The HSTF was used from 1951 through 1967 to store reagent-grade methyl isobutyl ketone (hexone) for makeup as a solvent for the REDOX Plant. After 1967, the HSTF contained distilled hexone, part or all of which had been used in the REDOX Plant. The S-142 tank also contained normal paraffin hydrocarbon (NPH) and tributyl phosphate (TBP) from a one-time campaign to separate americium, curium, and promethium from Shippingport reactor blanket fuel in 1966. Approximately 200 gallons (760 liters) of water were added to the S-141 tank in 1988. The S-142 tank received approximately 1,300 gallons (5,000 liters) of water in 1967, 500 gallons (1,900 liters) in the mid-1970's, and 200 gallons (760 liters) in the mid-1980's. The combined storage design capacity of the tanks (S-141 and S-142) is 48,000 gallons (182,000 liters) (S02). The treatment design capacity of the distillation system was 3,000 gallons (11,400 liters) of waste per day (T04). The storage design capacity of the railroad tank cars was 40,000 gallons (152,000 liters) (S01).

The mixed waste was pumped from the S-141 and S-142 tanks through a distillation system to decrease the radioactivity of the waste. The distilled waste was sent to temporary storage in railroad tank cars located within the HSTF, until completion of transfers to an offsite incinerator in June of 1992. Three distillation vessels containing process residue have been sampled and are stored at the Hanford Site as mixed waste. The S-141 and S-142 tanks currently each contain up to 5 to 30 gallons (19 to 114 liters) of liquid mixed waste containing 93% NPH and 7% hexone and up to 250 gallons (950 liters) of phosphate tar. The phosphate tar will be stored at the Hanford Site as mixed waste. The railroad tank cars have been emptied, cleaned, and moved to another location. The HSTF is being closed under interim status.

IV. DESCRIPTION OF DANGEROUS WASTES

A. **DANGEROUS WASTE NUMBER** - Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describe the characteristics and/or the toxic contaminants of those dangerous wastes.

B. **ESTIMATED ANNUAL QUANTITY** - For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** - For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed dangerous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER - Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.

2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "Included with above" and make no other entries on that line.

3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

EXAMPLE FOR COMPLETING SECTION IV (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

L I N E .	A. DANGEROUS WASTE NO. <i>(enter code)</i>	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEA- SURE <i>(enter code)</i>	D. PROCESSES				
	1. PROCESS CODES <i>(enter)</i>				2. PROCESS DESCRIPTION <i>(if a code is not entered in D(1))</i>			
X-1	K054	900	P	T03	D80			
X-2	D002	400	P	T03	D80			
X-3	D001	100	P	T03	D80			
X-4	D002			T03	D80			<i>included with above</i>
1	D001	245,400	P	S02	T04	S01		Storage -Tank/Treatment-Other Distillation/Storage-Container
2	F003		↓	↓	↓	↓		↓
3	WC02		↓	↓	↓	↓		↓
4	WT02		↓	↓	↓	↓		Included With Above
5								
6								
7								
8								
9								
10								

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

The S-141 tank was used to store waste hexone (F003) that was used as a solvent in the REDOX Plant. The mixed waste was considered ignitable

The S-142 tank also was used to store waste hexone. In addition, the S-142 tank also stored waste NPH and TBP. This mixture was designated F003, D001, WT02, and a carcinogenic state-only waste (WC02). These wastes resulted from a one-time campaign to separate americium, curium, and promethium from Shippingport reactor blanket fuel in 1966. The estimated annual quantity of waste that was treated and stored in the S-142 tank was approximately 16,000 gallons (61,000 liters).

All existing facilities must include in the space provided on page 5 a scale drawing of the facility (*see instructions for more detail*).

All existing facilities must include photographs (*arial or ground-level*) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (*see instructions for more detail*).

LATITUDE (<i>degrees, minutes, & seconds</i>)					LONGITUDE (<i>degrees, minutes, & seconds</i>)				

VIII. FACILITY OWNER

- ☒ A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.
- ☐ B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER

2. PHONE NO. (area code & no.)

3. STREET OR P.O. BOX

4. CITY OR TOWN

5. ST.

6. ZIP CODE

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME (print or type)

John D. Wagoner, Manager
U.S. Department of Energy
Richland Operations Office

SIGNATURE

John D. Wagoner

DATE SIGNED

06/30/1994

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME (print or type)

SEE ATTACHMENT

SIGNATURE

DATE SIGNED

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

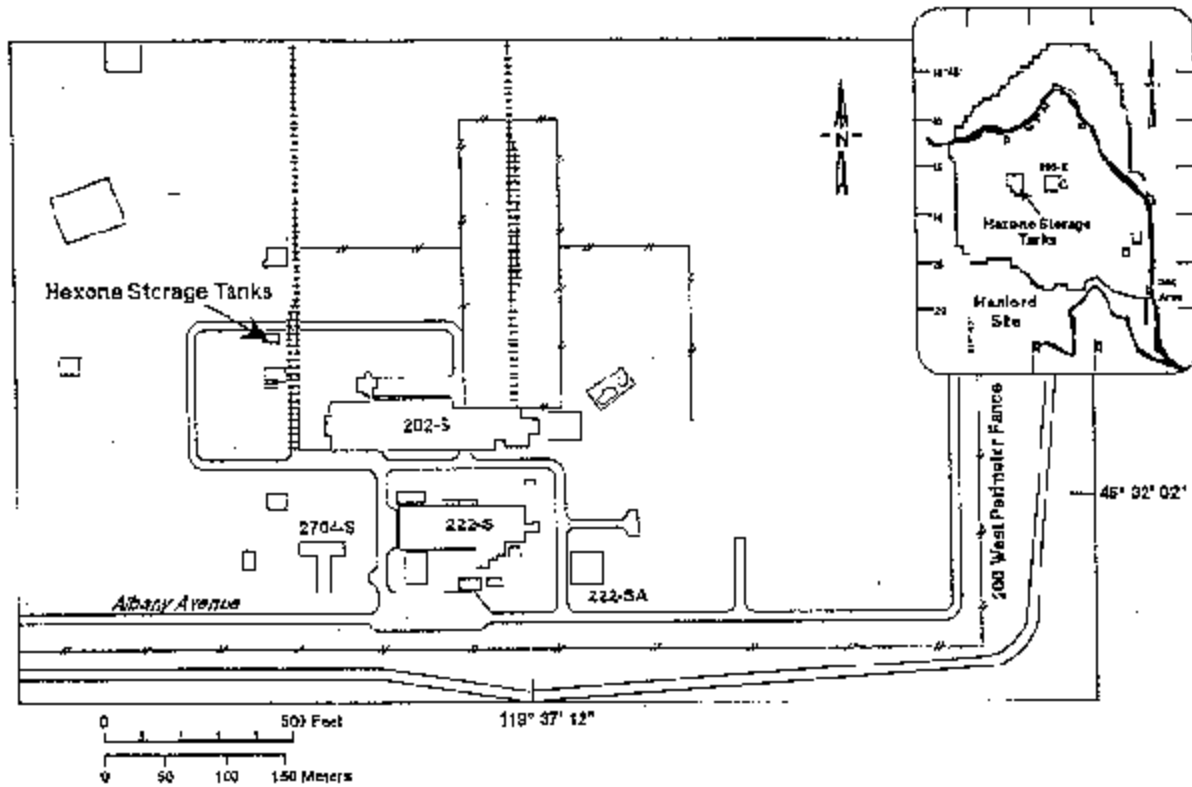
John D. Wagoner
Owner/Operator
John D. Wagoner, Manager
U.S. Department of Energy
Richland Operations Office

6/30/94
Date

Edward S. Keen
Co-Operator
Edward S. Keen, President
Bechtel Hanford, Inc.

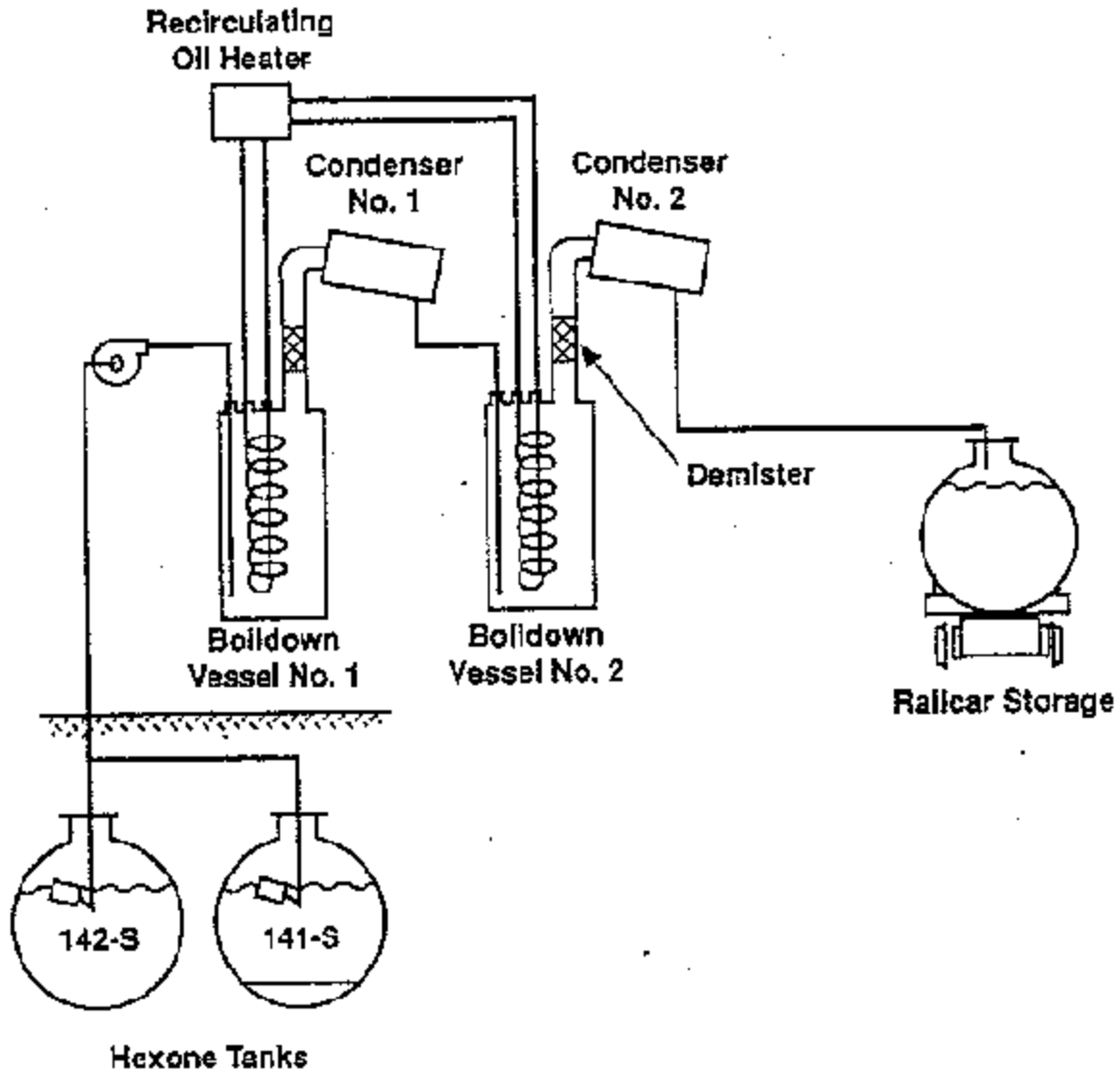
6/30/94
Date

276-S-141 and 142 Hexone Storage Tanks Site Plan



39210044.1

Hexone Treatment System Schematic



276-S-141 and 142 Hexone Storage Tanks



46°32'08"
119°37'23"

8706421-7CN
(PHOTO TAKEN 1987)